

Summary

Significant changes were made to Dutch lower secondary education with the introduction of preparatory middle vocational education (VMBO) in 1999. Since then, all students follow the same classes for the first two years. Subsequently, based on their academic performance they choose one of four learning trajectories: basic vocational, middle-management vocational, mixed or theoretical. This differentiation is supposed to lead to a smoother transition into middle vocational education (MBO). At the same time, admission to VMBO was widened, to accept students with learning disabilities. This group was expected to encounter more problems when following regular VMBO. Supportive education (LWOO) was established for such students, so that they too would have a chance to successfully finish VMBO. This trajectory support takes place mainly in the first two academic year of VMBO, and aims at helping students who lag behind to catch up. This help is geared mainly towards students, so other educational variables such as teachers, materials and organisational aspects were more or less left out of consideration.

In this dissertation we examine the effect of an intervention aimed at the student, comparing the common approach with a new one. The first approach consists of a form of remedial teaching outside of the class context, and is aimed at specific subjects, such as Dutch and math. The content tends to come from common teaching methods for elementary school groups 6 to 8 (Henneman, Kleijnen & Smits, 2004; Kervezee, 2003; Kleijnen, 1997; Mulder, De Boom, Heyl, Klatter & Severiens, 2003). The materials are more or less repeated. The second experimental approach consists of the method *Hulp op Maat* (*HoM*, Customised Help, Heethuis & Koekkoek, 1996). Using this method an attempt is made to improve math and language skills as well as general cognitive skills (visual and verbal information processing). The authors of the method assume that the most effect can be expected with a combined approach of general and specific teaching conditions. This means that the *HoM* method offers students one single package of training programs aimed at various information-processing, language and math skills. These training programs are offered on the computer, adjusted to the students' level and specific learning problems. In addition to the content-related and didactic differences between the two approaches, there is an organisational difference too: the *HoM* method is not offered after but during regular classes, thus replacing part of the classes.

No research has been done into the effects of these approaches though. The central goal of this dissertation is to determine the effect of the *HoM* method compared to regular methods. This results in the following research question: *What is the effect of the HoM method on the learning skills and academic performance of students who receive supportive education (LWOO) during lower secondary vocational education, compared to the regular method?*

To investigate the effects, two groups were selected: an experimental group that used the *HoM* method and a control group that followed mainstream education programs. The experimental group consisted of 106 students from four schools. They trained an average of 62 hours with the *Multitrainer* computer program, aiming at improving information-processing, language and mathematical skills. Exercises varied from basic information-processing skills, such as audiovisual perception and the use of strategies, to more specific academic skills such as math. The control group was comprised of 95 students from four other schools, who did not work with the *HoM* method. Still, they received some form of support on the basis of already-existing methods, which also included exercises to improve information-processing, language and math skills. The content consisted primarily of a repetition of what is offered in elementary school. These programs were not usually adjusted to the individual needs of the student.

To find out whether the *HoM* method had an impact, pre-test, post-test and follow-up measurements were taken for both groups. The DLS (test assessing learning disabilities and school trajectory) was applied to determine what progress students made in processing information, language skills and mathematical ability. Average grades per school year and examination results were used to assess achieved academic performance of the students in both groups. Additionally, the *Nederlandse Persoonlijkheidsvragenlijst* (NPV-J, Dutch Personality Questionnaire for Youth) was administered at the beginning of lower secondary professional education to determine the influence that a student's social and emotional problems had on the learning progress. Based on the results of the three measurement moments, students' development was determined and compared to our expectations.

First, the impact of training with the *HoM* method on information processing, language and mathematical skills was analysed. The results showed that the group using the *HoM* method advanced significantly on all aspects. For visual-spatial information-processing, reading comprehension and mathematical ability, results even showed a larger progression than with the control group.

Second, a possible larger effect of the *HoM* method on academic performance than the regular program was examined. Both groups obtained similar final grades. The examination results of the experimental and control groups differed significantly. The experimental group had fewer students in the lower vocational trajectory (lower level) and more students in the middle-management vocational trajectory (basic level). The conclusion would be that, on average, those students in the experimental group probably got higher grades in their examination.

Third, the predictability of the attained performance was studied. It was examined whether learning skills and academic performance at the follow-up measurement could be predicted by student characteristics and method employed. The performance level that students with LWOO attained at the end of lower secondary professional education depended by only 13% on starting skills, social and emotional behaviour, and the used method. On the basis of these factors, the examination levels could be predicted of 57.8% of the students. From this analysis it appears that as students had higher starting skills and fewer social-emotional problems, and worked more often with the *HoM* method, they got higher report marks and final examination levels. Remarkably, the contribution of the *HoM* method to the final results is limited.

The conclusion drawn from this research is that the experimental group that worked with the *HoM* method made more progress on the academic skills of visual information processing, reading comprehension and mathematical ability than the control group that worked with mainstream education programs. Almost no difference was found between the groups on the learning skills of verbal information processing and spelling. The *HoM* method had a small positive impact on academic performance. Those students who worked with the *HoM* method obtained similar grades, but succeeded at a higher examination level. The influence of the *HoM* method in terms of gains in academic performance has proven to be limited. LWOO students who have low starting skills seem to be a particularly difficult group to achieve results with. The grades of such students keep dropping, and many do not attain a sufficiently high examination level. To solve this, the *Multitrainer* program should be adjusted and implementation of the *HoM* method improved. Early, integrated intervention for as long and as frequently as needed is recommended. As a result, the current non-differentiated care structure of lower secondary vocational education may require change. Given the restricted contribution of the method,

other changes in preparatory middle vocational education (VMBO) should take place too. When designing the academic environment, it would be desirable to take the possibilities and motivation of students with LWOO more into account, so that their future vocational competencies are improved. After all, that's what it should all be about.